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AUTHOR Brown, Gary
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ABSTRACT

This study examines the multi-modal synthesis of source examples in student compositions. Multimedia is used to present on-screen text and video information on Chinese superstitions and traditions, and then to prompt subjects to write. The research compares the number and kinds of examples students produce in their writing. Kind refers to the source of influence, either audio/video or the written transcript of that audio/video. Forty subjects from Washington State University participated in the study. Students were first asked to read a sample of professional writing and then to write a response to it. In addition, full motion laser audio/video was used as source material. The results demonstrated that the audio/video mode of presentation provides a significantly richer resource for detail than on-screen text for student compositions in the immediate task, but the audio/video resource does not sustain influence in the delayed composition task. These results provide support for the argument that implementation of multimedia in composition instruction merits greater attention to task as well as to the interpretation and analysis of audio/video material if the rich audio/video resource potential multimedia makes available is to be useful in composition instruction. (Contains 17 references.) (Author/MAS)

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Multimedia and Composition: Synthesizing Multimedia Discourse

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GARY BROWN
Student Advising & Learning Center
Washington State University
Cleveland 57
Pullman, WA 99164-2105
Browng@wsuvm1.csc.wsu.edu

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Abstract: This study examines the multi-modal synthesis of source examples in student compositions. Multimedia is used to present on-screen text and video information on Chinese superstitions and traditions and then to prompt subjects to write. The research compares the number and kinds of examples students produce in their writing. Kind refers to the source of influence, either audio/video or the written transcript of that audio/video. The results demonstrated that the audio/video mode of presentation provides a significantly richer resource for detail than on-screen text for student compositions in the immediate task, but the audio/video resource does not sustain influence in the delayed composition task. These results provide support for the argument that implementation of multimedia in composition instruction merits greater attention to task as well as to the interpretation and analysis of audio/video material if the rich audio/video resource potential multimedia makes available is to be useful in composition instruction.

Introduction and Problem Statement

As multimedia delivery systems for instruction have proliferated, they have found their way into writing intensive courses. The designs as well as the assumptions underlying the goals of integrating multimedia into education vary widely, but almost all suggest, at least in those courses where the outcome of instruction depends upon student writing, that multimedia, and particularly audio/video sources, have influenced that writing. The nature of that influence, however, has not been examined. Meanwhile, popular consensus points repeatedly and suspiciously toward the trend away from the primacy of print. As Maxson contends, "The influences of MTV exert more influence on student text than does the academy" (1993).

Maxson's contention is not unfounded. Ninety-eight percent of American households own a television (Gates, 1993). As Gates observes, "It's MTV more than Montaigne, Viacom more than Voltaire" (Gates, 1993, p. 116). Much television research tends to support both the dominance of audio/video media consumption, and suspicions toward audio/video media's influence upon learning. Contrary to the more positive assumptions underlying multimedia's rapid development and implementation in the classroom, extensive consumption of visual media beyond a threshold of only ten hours per week begins to correlate with weak language skills, a correlation that is pronounced at viewing of over thirty hours per week (Potter, 1987). Graber (1990) has found that we learn very little from watching television news. Meanwhile, our apparent growing reliance upon visual media continues, encouraged by the availability and increasing ease of video manipulations with instantly digitized graphic capabilities now migrating into mainstream word processing programs. The decline of the primacy of the age of print, as McLuhan (1969) forecast, appears to be further accelerated by advanced memory compression and on line-video libraries, not to mention the implications of the rapid development and decreasing cost of hand-held camcorders, video boards, scanners, speech fluid word-processors and even virtual reality. All of these breakthroughs portend at least the transformation if not the demise of composition skills as we have known them.

In spite of the perceived dangers of audio/video as it is represented by television, theories and limited studies claim that multimedia can be used to improve beginning student reading, writing, and general literacy skills beyond the scope of conventional instructional methodologies. The work of DiPardo and DiPardo (1990), Slatin (1990), Bransford et al. (1990) implicitly and overtly counter that media design can be used to encourage

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and improve the academic performance of students. For instance, Bransford's work argues that there is "more to notice" (1990, p. 124) in visuals than in text. Bransford argues that we can improve the academic performance of those students who tend to rely more on visuals, if, as Graber (1990) also cautions, the visuals are appropriately stimulating and adequately mediated. Still, even the enthusiastic multimedia practitioners acknowledge the difficulty involved in verifying their theories. As John Slatin says, multimedia technologies and writing instruction will require "both a new practice and a new rhetoric, a new body of theory" (1990).

Source Tracking

As multimedia provides an opportunity to mediate visuals, so source synthesis may provide one useful operationalization of multimedia influence upon composition. Research in writing from sources preceding multimedia technologies reflects that need to explore source synthesis, or the sources writers draw upon when they compose. After all, expert writers, research has established, process, select, organize and connect source texts (Hayes et al., 1992; Spivey, 1992). As Spivey notes in her introduction to "Discourse Synthesis: Creating Texts from Texts" (1992), although students who worked from the same texts "produced texts that had some commonalties in content as well as in overall organizational patterns, the writers varied in how they chunked the material, how much material they selected as relevant, and how they connected the material for the reader" (p. 469). Spivey maintains that such "discourse synthesis" is "characterized by its selectivity and its integrativeness" (p. 469). Such selection or choice is particularly important, Spivey maintains, because it must also be integrated to "provide coherence to material from diverse sources and perspectives" (p. 469). This "meaning construction," she argues, "includes both production and comprehension" (p. 470). Though Spivey's work deals exclusively with text, multimedia technologies make the need to explore discourse synthesis more acute.

Concrete Detail

Since multimedia provides an image rich environment, imagery suggests a natural focus for source investigation. After all, the use of images in text has itself held a kind of primacy predating electronic media: "A picture is worth a thousand words." This aphorism has been held as truth even, ironically, in text. As Richard Ohmann observes, citing E. D. Hirsch, Jr. and his "accumulated wisdom of the handbooks," There are only two "maxims" that appear out of a dozen in every major handbook-- "Use definite, specific, concrete language" (1988, p. 353). Ohmann pursues these maxims in detail and into three additional popular handbooks that treat the issue extensively and cite the need to use specific details as a way to "avoid abstract writing" (p. 354) and to make writing "'richer,' more 'vivid,' and more 'intense'" (p. 357). Does multimedia imagery directly influence the transformation of that imagery by students into their own texts? Is what we view as writers as accessible as what we read. The following study was designed to explore multimedia discourse synthesis to begin to assess the influence of multimedia, and specifically audio/video influence upon student writing.

Methodology

The writing assignments examined in this study were designed to reflect a common academic writing task in which students are first asked to read a sample of professional writing and then to write a response to that reading. In this study, however, in addition to exposing subjects to text, full motion laser audio/video was also used as source material for subjects before they were asked to write. The primary dependent measure in both the immediate and the delayed composition tasks was details used in subject's writing and, specifically, the source of that detail as it could be traced to the mode of the message, either the text mode or the audio/video mode presented in the multimedia environment. Secondary dependent measures included recall and time on source.

Forty subjects from Washington State University participated in the study. Four treatments were sequenced to control for message mode and order. Each of the four treatments began with an introductory excerpt from Kingston's "No Name Woman," the subject matter for the second assigned written part of the study. Following the text excerpt from the Kingston source text, each treatment presented one of two possible audio/video supplements on Chinese traditions and superstitions and one of two possible on-screen text transcript supplements on Chinese traditions and superstitions. The text supplements were transcribed from the narrative of the video/narration supplements. The audio/video screens included controls for subjects to pause and review material in order to parallel the recursive nature of reading.

Apparatus, Materials, Stimulus and Facilities

Hardware:

The computer used to present the multimedia treatments was a Macintosh IIci. The laser video player used was a Pioneer 8000 laser disc player. The video and narration were presented using a 19" Mitsubishi color television.

Source Material:

The laser program used as text supplement was the National Geographic™ video, "Portrait of a Hong Kong Family." The program was selected based upon its depiction of themes parallel to those developed in the Kingston essay--superstition and traditions in China and their impact upon sex roles. The program was easily edited and re purposed to support and augment the themes in Kingston's essay/story.

Maxine Hong Kingston's essay/story, "No Name Woman" is excerpted from her novel of the same name in a textbook, Writing About the World.

Multimedia Design:

HyperCard™ and The Voyager Video Stack™ were used to create a linear stack, sequencing the screens subjects saw in each treatment from the first to the last without options. This design was selected because issues of multimedia navigation might have created distracting variables for the purposes of this study, though navigation issues, including providing the subject with control of the mode of delivery, certainly suggest future research. The last of the screens subjects viewed instructed them to write about Chinese tradition and superstition. The prompt encouraged subjects to use concrete examples and to write about a page and half.

Procedures

When subjects finished the multimedia program, they were prompted to describe what they had seen, heard, and read. When they finished, they were presented with the assignment to read the Kingston story/essay, and they scheduled a time to return and write again about the reading. Within a week, each subject returned to write about the influence of superstition and tradition on the role of women China.

Rating subject compositions required two-steps. First, two raters identified details. The cross check reliability was .79. The second step of the rating procedure determined source mode distribution. Two additional source raters maintained a reliability of .95.

In addition, following the composition task subjects completed a multiple choice recall test to control for recall variables. A post hoc written debriefing was conducted to further illuminate the findings.

Results

Immediate Composition Detail Synthesis

Both message order of source mode presentation and recall were eliminated as a significant variables. It was therefore possible to collapse across order to increase the statistical power. (Instead of analyzing ten cases in each treatment, it was possible to statistically examine forty cases by each mode.) After collapsing across order, the design for subsequent analyses was a 2 (mode) x 2 (message) mixed subjects design.

The mean for detail in subjects' writing traceable to the audio/video source was 15.9. The mean for detail traceable to text was 5.1 ($F(1,39) = 51.67$, $p<.0001$). The multimedia audio/video source significantly dominated the text source as an influence in the production of detail in subjects' writing. (See figure 1.)

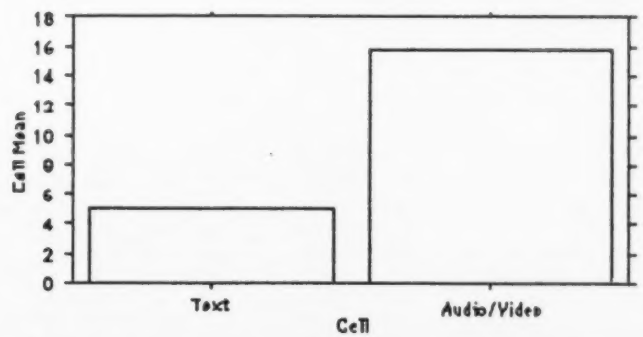

Figure 1. Immediate Composition Source Detail by Mode

Delayed Composition Detail Synthesis

In the delayed composition task, there was no traceable evidence of the multimedia source, either audio/video or text. Since there was zero variance in either the on-screen text or the audio/video variables, a t-test was used to test the main effect of treatment mode to detail production. The effect is significant (t-Value = 10.848, p<.0001). The means for detail traceable to the Kingston source text at 16 was significantly higher than the means for audio/video or on-screen text--both of which were 0. (See Figure 2).

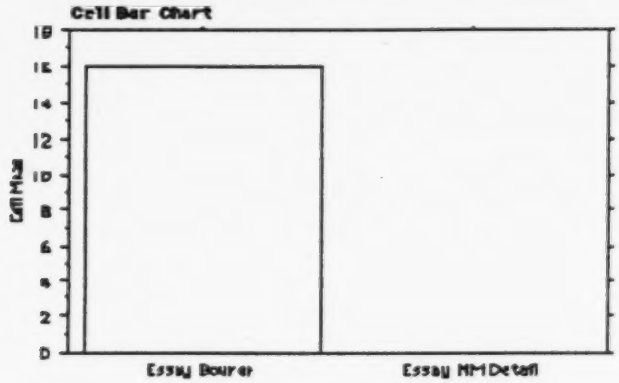

Figure 2: Delayed Composition Source Detail by Mode

Discussion

The dominant influence of the audio/video in the immediate composition task, in spite of the sequence of presentation, supports the contention that multimedia and particularly audio/video "mini-cases" can be rich in information or detail (Spiro and Nix, 1992; Bransford, 1992) and that "the visual material was more 'potent'" than text (Martin & Ditcham, 1987, p. 10). At least during the immediate composition task, students were more than three times as likely to use detail presented on the television screen than they were to use detail presented as text on a computer screen.

Contrary to the audio/video dominance in the immediate composition task, however, the delayed composition task shows no evidence of multimedia influence--audio/video or text. The potential use of audio/video established earlier in this study was supplanted entirely by source text dominance. All of the traceable detail used in the delayed composition task was synthesized from either personal experience (X=6) or the Kingston story, "No Name Woman" (X=16). Since both time on source and recall were controlled for, this finding poses a number of interesting questions for further research.

Perhaps the sequence of the design, a design in which students read the Kingston text *after* experiencing the multimedia treatment, results in recency effects that wash any recall of the multimedia sources. However, the *complete absence* of traceable multimedia influence coupled with the debriefing explanations substantially subordinate or even eliminate recency or other related effects. If the traceable multimedia sources were diminished in the delayed composition task, recency might provide an important explanation. But the few subjects who do refer to the tendency to write about the most recent stimulus tend to qualify their explanations in ways that suggest that it is not an inability to recall multimedia sources that influenced subjects' composition decisions. For instance, in post experimental debriefings, one subject, who described the delayed composition aspect of the experiment as "a typical [freshman English] assignment. . . one that requires time and recollection of facts," said: "It never occurred to me to use the information from the previous day in the essay I wrote today. I tend to focus more on the task at hand and *what's given to me* in regards to the task. It's really strange to me that I didn't even think to use the previous information I received." Several additional debriefing comments corroborated this student's observation.

It may be, of course, that the absence of multimedia source influence simply reflects that the prompt was not specifically clear in suggesting the possibility for using multimedia source material. Grimes explains conflicting findings in his work by pointing to "the nature. . . of the task itself and experimenter instructions. . ." (in press, p. 42). But the assignment did clearly prompt for descriptive detail of Chinese superstition and tradition, stating: "Discuss *in as much detail as you can* . . . ." In other words, more than simply a failure of the assignment to sufficiently prompt students to draw upon the multimedia sources, it seems more likely that

subjects for some reason do not perceive the "typical" composition assignment as a task that might accommodate material from previously presented multimedia sources.

Perhaps, the contrary findings between the immediate and delayed composition tasks may best be understood by considering the following debriefing response. The subject explains: "I consciously and purposefully drew only upon specific and general examples set up by the reading. Unconsciously, I think the video lent background and insight into my writing. . . . The video gave me a background on the importance of such superstition, but I don't think that it caused me to analyze it any further. In writing the essay, I think I felt obligated or bound to writing about the text."

First of all, notice again that the subject reports memory for the video source. Secondly, though, notice that the subject reports of a perception of the task in which he feels "obligated or bound to writing about the text." One post hoc emerging finding, in other words, was that task representation was instrumental in influencing the kind of information student subjects developed in the delayed composition task. In this case, though, like the subject who felt "obligated" to write exclusively about the text, the perception of the assigned task prohibited the transfer of the previously presented multimedia material--text screen or audio/video. Task, as Flower and Hayes (1988) define it, involves the mental representations that shape our goals, our concept of audience, and the construction of a text itself: "People only solve the problem they give themselves to solve" (p. 93). The "image of one's rhetorical problem . . ." (1988, p. 93) as Flower and Hayes contend, has been significantly influenced by the relationship of previous academic experience, multimedia or otherwise, to the delayed composition task, in this case a task whose representation has been shaped by much more than just the message mode. As one subject reports, "In my writing. . . I want to hit everything relevant to *what I think one wants from my writing*" (Italics mine). Who the subject here regards as audience is not clear, but who or what it is often elicits a sense of obligation that significantly shapes student writing and the synthesis of detail in a way that significantly favors the most recently encountered traditional text.

The findings in the delayed composition study reported here, then, suggest the need to regard task as more than simply an artifact of message mode. Nonetheless, there is also reason to explore the relationship of message mode to the perception of task and not to dismiss it as insignificant. For instance, consider again the subject who said, "The video gave me a background on the importance of such superstition, but I don't think that it *caused me to analyze it any further. . . .*" . Ironically, it seems prudent not to completely disregard the message mode itself, in this case the "image" of the video. Is there, perhaps, an aspect of the video mode that elicits a resistance in subjects to "analyze" the video information "any further," something inherent in the audio/video message mode that reshapes, or fails to shape, "the image of one's rhetorical problem"?

Within the context of this study there is substantial fodder for speculation relative to multimedia implementation and multimedia discourse synthesis. As Spiro et al contend: "A fundamental tenet of all recent theories of comprehension, problem solving, and decision making is that success in such cognitive arenas depends on the activation and appropriate application of relevant preexisting knowledge" (1986, p. 177). Surely it is reasonable to include composition and multimedia discourse synthesis as aspects of "comprehension," "problem solving" and cognitive "decision making." Consequently, it may be wise in future research to consider both the conceptualization of task as well as the conceptual transfer of mode specific "relevant preexisting knowledge" in terms of "appropriate application" constraints.

Study of discourse synthesis writing as Spivey (1992) practices and advocates, and multimedia source synthesis, as Palumbo and Prater (1993) predict, are valuable approaches toward understanding the composition process. The findings in this study may begin to be useful in putting together the inscrutable puzzle of that process and in the design and delivery of multimedia environments. Clearly audio/video information provides a rich source of detail that is available to writers during the composing process. But it appears equally important to understand that there is nothing magical about multimedia sources that will inform the traditional textual analysis without more control of the implementation of the multimedia than this study, a study based largely upon current academic practices, afforded.

Finally, and extending from the previous point, even if the transfer of discreet detailed information from multimedia environments can be harnessed, there is no evidence that quantity of detail alone will improve student writing. In other words, the detail dominance of the audio/video mode apparent in the immediate composition task does not necessary correlate with higher quality writing. In that sense, as critics fear, new media harbors as much threat as promise if it is not re-purposed toward more cognitively complex tasks that include transfer and analysis. The point to point digital nature of audio/video sources, or the "Being There" effects of audio/video sources, provide a great deal of potential for education as well as entertainment, but the pitfalls loom large.

More than simply the mode of the message, it remains the implementation or mediation of the media that seems to really matter. It is a complex task. It will continue to require teachers.

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